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COVER PAGE

The Illinois chorus frog (*Pseudacris streckeri illinoensis*) and the dredge material deposition sites at Beardstown, Illinois

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EXECUTIVE SUMMARY

The Illinois chorus frog (*Pseudacris streckeri illinoensis*), a state threatened amphibian, occupies a location where the U.S. Army Corps of Engineers' dredge material placement operations may cause incidental take. The purpose of the project is to monitor the response of the frog to the District's conservation plan at two placement sites and breeding sites to be constructed in the future. No population estimate for 2004 could be made due to lack of recaptures. Lack of early spring rain caused the Illinois chorus frog to skip breeding at the site. In total, 4 frogs were caught at site 1 and none at site 5. No transforming Illinois chorus frogs were caught. Illinois chorus frogs were not heard calling at the site and water was not present during the breeding season for this frog.

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INTRODUCTION

The Illinois chorus frog (*Pseudacris streckeri illinoensis*) is an anuran amphibian that occurs in areas of sandy soils in Arkansas, Illinois, and Missouri (Conant and Collins, 1991). This highly fossorial frog occurs in Illinois mainly along the central part of the Illinois River (Brown and Rose, 1988; Phillips et al., 1999).

This frog occurs in the Beardstown area where the District has placed dredge material from previous navigation channel maintenance on the Illinois Waterway. Future dredged material operations may cause incidental take of this Illinois threatened species. The District has developed a conservation plan for the species to comply with Illinois Department of Natural Resources (IDNR) incidental take authorization. This report contains results from the fourth year of monitoring for Sites 1 and 5, and the second year post-breeding pond construction.

OBJECTIVES

The purpose of the project is to monitor changes in population size and to determine recruitment rate of the species at the dredged material deposition sites, and utilization at constructed breeding ponds in response to the District's conservation plan and conditions of the Incidental Take Authorization issued by the Illinois Department of Natural Resources.

METHODS

Study sites: The study sites are located at sixth street in the city of Beardstown, Illinois (SE, sec. 16, T18N, R12W). These border the east side of the levee on the eastern bank of the Illinois Waterway. The study area included two sites (Sites 1 and 5). Site 1 includes a previously established dredged material placement site of about 13 acres (5.2 ha) (Fig. 1). Site 5 is about 7.83 acres (3.13 ha) in size and has not been used for dredged material previously.

Study organism: The Illinois chorus frog (*Pseudacris streckeri illinoensis*) has been confirmed in the project area. A voucher specimen had been previously deposited in the collection of the Illinois Natural History Survey (INHS 12952).

Drift fence methods: The primary method of study was drift fence (*sensu lato*) monitoring (Corn 1994). Drift fences have proven effective in another monitoring project with *Pseudacris s. illinoensis* (Tucker and Philipp, 1999).

Drift fences that were installed in 2003 were used in 2004 to monitor breeding ponds installed in 2002 at site 1. Two breeding ponds were constructed at site 1 in 2002. One of these ponds (= sand pond) was completely surrounded by 25-cm tall aluminum flashing in 2003 and 2004. The other (= soil pond) had silt fencing installed as a drift fence but was not completely surrounded. Pitfalls on all fences were monitored from mid-February to the end of June.

Reptiles and amphibians were marked by toe clipping, measured, and weighed (see below) and have the fence number and pit number recorded (Corn, 1994). Each animal was then immediately released on the opposite side of the fence.

Toe clipping (ARMI SOP no. 110, Green, 2001) was used to mark each frog. Toe clips identified year of capture and whether the frog is an adult or juvenile when marked. Toe clips were not used for individual recognition. Toe clips were preserved in 70% ethanol for possible later use in studies of skeletochronology or for DNA analysis. The scissors used to perform toe clips, besides being kept as sharp as possible, were stored in alcohol (70% ethanol) while in the field to reduce the possibility of disease transmission.

Each anuran then had its snout to vent length (SVL) measured to 1 mm with a mm rule and was weighed to 0.1 g with a portable O'haus digital balance. Sex was recorded for adults when possible. Finally

the reproductive state (i.e., gravid or spent) of females was determined when possible (e.g., Tucker, 2000).

Basic meteorological data was recorded at each site. These included precipitation measured with a rain gauge and air and soil temperature at 12 cm depth measured with Reo-temp brand thermometers.

Chorus intensity: Chorus intensity during night visits was recorded. Three ratings were used. Choruses were considered weak when only one or two males were heard calling simultaneously. Choruses were rated moderately strong when five or more males were thought to be calling continuously for at least five minutes. Choruses were rated strong when many males were calling simultaneously for at least five minutes.

RESULTS

Population estimates and recruitment: Only four Illinois chorus frogs were caught at site 1 in 2003 (Table 1). Three of these were not previously marked. One frog was caught leaving the sand pond. This frog had been marked in 2003 as it entered the sand pond. It apparently spent a year inside the drift fence that cirled the sand pond. Population estimates could not be made for 2004 because too few frogs were collected. No Illinois chorus frogs were caught at site 5.

The first Illinois chorus frog was caught on 5 March 2004 and the last was caught on 26 March 2004. The days when frogs were caught coincided with dates with rainfall. However, rainfall during spring 2004 never exceeded 3.5 cm. Four individuals that entered the sand pond in 2003 were eventually recaptured leaving it. Three of these left it in 2003 and the last in 2004. Had the pond collected water these males would have likely used the pond for breeding. However, lack of rainfall kept the sand pond from being used as a chorus site.

Chorus intensity: Choruses of the western chorus frog (*Pseudacris triseriata*), the southern leopard frog (*Rana sphenocephala*) and Fowler's toad (*Bufo fowleri*) occurred at site 1 in the sump area beginning on 5

March with the first two species and continuing into June for the last named species. However, on eleven night visits, no Illinois chorus frogs were heard calling at site 1. Frogs were heard calling at sites in Scott County and Madison County following the March 5 rain event.

DISCUSSION

Population estimates and recruitment: The population estimates and estimates of the percentage of frogs marked are important estimates because changes in this estimate are indirect measures of recruitment. If the estimate increases, then new frogs were likely added to the population. Unfortunately, the extremely dry spring of 2004 completely thwarted attempts to estimate populations.

It is likely that the dry spring resulted in lack of activity at the site. Without adequate spring rainfall the utility of the breeding ponds can not be assessed. However, rainfall was ample in May and June and anurans (southern leopard frog and Fowler's toad) did use the breeding ponds despite the low water levels in these ponds during May and June.

Chorus intensity: Chorus intensity is an indirect measure of population size. However, it is not an accurate one. Thus variation in chorus intensity due to variation in environmental conditions renders estimates based on chorus intensity suspect. During 2004, no Illinois chorus frogs were heard calling at site 1. Moreover, frogs were not heard at many of the other sites where they called in previous years. For instance, no frogs were heard at Cass County sites where large populations occur. Frogs were heard at a Madison County site but calling persisted for only 5 days. Frogs also called at a Scott County site but were heard for only 2 days.

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Table 1. Rainfall and frog captures at site 1.

Date	Rainfall (cm)	Frogs	Sex	Location
5 March	5.5	2	males	entering soil pond
15 March	1	1	male	perimeter fence
26 March	0.5	1	male	leaving sand pond